What is claimed is:

1. A disposable composite downhole tool comprising at least one fiber and a biodegradable resin that desirably decomposes when exposed to a well bore environment.

2. The disposable downhole tool of claim 1 wherein the at least one fiber is formed into a fabric.

3. The disposable downhole tool of claim 2 wherein the fabric is woven.

4. The disposable downhole tool of claim 2 wherein the fabric is nonwoven.

5. The disposable downhole tool of claim 1 wherein the at least one fiber comprises a degradable polymer.

6. The disposable downhole tool of claim 5 wherein the resin comprises a degradable polymer.

7. The disposable downhole tool of claim 6 wherein the resin and the at least one biodegradable fiber comprise a degradable polymer, which comprises an aliphatic polyester.

8. The disposable downhole tool of claim 7 wherein the aliphatic polyester comprises a poly(lactide).

9. The disposable downhole tool of claim 8 wherein the poly(lactide) comprises poly(L-lactide), poly(D-lactide), or poly(D,L-lactide).

10. The disposable downhole tool of claim 6 wherein the resin and the at least one fiber comprise a degradable polymer, which comprises a polyanhydride.

11. The disposable downhole tool of claim 6 wherein the resin and the at least one fiber further comprise plasticizers.

12. The disposable downhole tool of claim 11 wherein the plasticizers are selected from the group consisting of derivatives of oligomeric lactic acid; polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters (such as tributyl citrate oligomers, triethyl citrate, acetyltributyl citrate, acetyltriethyl citrate); glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; Poly(caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate; dipropylene glycol dibenzoate; glycerol; ethyl phthalyl rthyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; and combinations thereof.

13. The disposable downhole tool of claim 1 wherein the resin and the at least one fiber comprise one or more compounds selected from the group consisting of polysaccharides such as dextran or cellulose; chitin; chitosan; proteins; aliphatic polyesters; poly(lactide); poly(glycolide); poly(ε-caprolactone); poly(hydroxybutyrate); poly(anhydrides); aliphatic polycarbonates; poly(orthoesters); poly(amino acids); poly(ethylene oxide); and polyphosphazenes.

14. The disposable downhole tool of claim 1 wherein the resin and the at least one fiber comprise one or more compounds selected from the group consisting of poly(adipic anhydride), poly(suberic anhydride), poly(sebacic anhydride), poly(dodecanedioic anhydride), poly(maleic anhydride), and poly(benzoic anhydride).

15. The disposable downhole tool of claim 1 wherein the biodegradable resin is selected to achieve a desired decomposition rate when the tool is exposed to the well bore environment.

16. The disposable downhole tool of claim 1 wherein the well bore environment comprises an aqueous fluid.

17. The disposable downhole tool of claim 1 wherein the well bore environment comprises a well bore temperature of at least 60°F.

18. The disposable downhole tool of claim 1 wherein the decomposition is due to hydrolysis.

19. The disposable downhole tool of claim 1 wherein the tool decomposes within about a predetermined amount of time.

20. The disposable downhole tool of claim 1 further comprising at least one non-reinforcing filler material.

21. The disposable downhole tool of claim 20 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

22. The disposable downhole tool of claim 1 wherein the at least one fiber is formed of one of the stereoisomers of polylactic acid and the resin is formed of poly(D, L lactide).

23. The disposable downhole tool of claim 1 wherein the at least one fiber is formed of a material selected from the group consisting of fiberglass, polygylcolic acid, kevlar, nylon, nyomex, carbon fibers, carbon nanotubes and rigid rod polymers.

24. The disposable downhole tool of claim 23 wherein the biodegradable resin is formed of one of the stereoisomers of polylactic acid.

25. The disposable downhole tool of claim 23 wherein the biodegradable resin is formed of poly(D, L lactide).

26. A disposable composite downhole tool comprising at least one aliphatic polyester fiber formed of a stereoisomer of polylactic acid and an aliphatic polyester resin formed of a mixture of L-lactide and D-lactide that desirably decomposes when exposed to a well bore environment.

27. The disposable downhole tool of claim 26 further comprising at least one non-reinforcing filler material.

28. The disposable downhole tool of claim 27 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

29. A disposable composite downhole tool comprising a fabric formed of at least one poly(lactide) or polyanhydride fiber and a poly(lactide) or polyanhydride resin that desirably decomposes when exposed to a well bore environment.

30. The disposable downhole tool of claim 29 further comprising at least one non-reinforcing filler material.

31. The disposable downhole tool of claim 30 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

32. A system for performing a one-time downhole operation comprising a composite downhole tool comprising at least one fiber and a biodegradable resin and an enclosure for storing a chemical solution that catalyzes decomposition of the downhole tool.

33. The system of claim 32 wherein the chemical solution comprises a basic fluid, an acidic fluid, an enzymatic fluid, an oxidizer fluid, a metal salt catalyst solution or combination thereof.

34. The system of claim 32 further comprising an activation mechanism for releasing the chemical solution from the enclosure.

35. The system of claim 34 wherein the activation mechanism comprises a frangible enclosure body.

36. The disposable downhole tool of claim 32 further comprising at least one non-reinforcing filler material.

37. The disposable downhole tool of claim 36 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

38. A method for performing a one-time downhole operation comprising the steps of installing within a well bore a disposable composite downhole tool comprising at least one fiber and a biodegradable resin and decomposing the tool *in situ* via exposure to the well bore environment.

39. The method of claim 38 wherein the at least one fiber comprises a degradable polymer.

40. The method of claim 39 further comprising the step of selecting the at least one biodegradable resin to achieve a desired decomposition rate of the tool.

41. The method of claim 38 wherein the well bore environment comprises a well bore temperature of at least 60°F.

42. The method of claim 38 further comprising the step of exposing the tool to an aqueous fluid.

43. The method of claim 42 wherein the tool is exposed to the aqueous fluid before the tool is installed in the well bore.

44. The method of claim 42 wherein the tool is exposed to the aqueous fluid while the tool is installed within the well bore.

45. The method of claim 38 wherein the tool decomposes via hydrolysis.

46. The method of claim 38 wherein the tool decomposes within about a predetermined amount of time.

47. The method of claim 38 further comprising the step of catalyzing decomposition of the tool by applying a chemical solution to the tool.

48. The method of claim 47 wherein the chemical solution comprises a basic fluid, an acidic fluid, an enzymatic fluid, an oxidizer fluid, a metal salt catalyst solution or combination thereof.

49. The method of claim 47 wherein the chemical solution is applied to the tool before the downhole operation.

50. The method of claim 47 wherein the chemical solution is applied to the tool during the downhole operation.

51. The method of claim 47 wherein the chemical solution is applied to the tool after the downhole operation.

52. The method of claim 47 wherein the chemical solution is applied to the tool via the step of dispensing the chemical solution into the well bore.

53. The method of claim 52 wherein the dispensing step comprises the steps of lowering a frangible object containing the chemical solution into the well bore and breaking the frangible object.

54. The method of claim 47 further comprising the steps of dropping a dart into the well bore and engaging the dart with the tool to release the chemical solution.

55. The method of claim 54 wherein the dart contains the chemical solution.

56. The method of claim 54 wherein the tool contains the chemical solution.

57. The method of claim 38 wherein the at least one fiber is formed into a fabric.

58. The method of claim 38 wherein the resin and the at least one biodegradable fiber comprise a degradable polymer.

59. The method of claim 38 wherein the resin and the at least one biodegradable fiber comprise one or more compounds selected from the group consisting of polysaccharides such as dextran or cellulose; chitin; chitosan; proteins; aliphatic polyesters; poly(lactide); poly(glycolide); poly(ε-caprolactone); poly(hydroxybutyrate);

poly(anhydrides); aliphatic polycarbonates; poly(orthoesters); poly(amino acids); poly(ethylene oxide); and polyphosphazenes.

60. The method of claim 38 wherein the resin and the at least one biodegradable fiber comprise one or more compounds selected from the group consisting of poly(adipic anhydride), poly(suberic anhydride), poly(sebacic anhydride), poly(dodecanedioic anhydride), poly(maleic anhydride), and poly(benzoic anhydride).

61. The method of claim 38 wherein the downhole tool further comprises at least one non-reinforcing filler material.

62. The method of claim 61 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

63. A method for performing a one-time downhole operation comprising the steps of installing within a well bore a disposable composite downhole tool comprising at least one poly(lactide) or polyanhydride fiber and a poly(lactide) or polyanhydride resin and decomposing the tool *in situ* via exposure to the well bore environment.

64. The method of claim 63 wherein the downhole tool further comprises at least one non-reinforcing filler material.

65. The method of claim 64 wherein the at least one non-reinforcing filler material is selected from the group consisting of an alumina, beryllia, mica, silica, silicate, zirconium silicate, aluminum oxide, fibrous filler, $CaCO_3$, hydrated alumina, and phenolic microballoon.

66. A method of manufacturing a disposable downhole tool that decomposes when exposed to a well bore environment comprising the step of forming a composite material comprising at least one fiber and a biodegradable resin.

67. The method of claim 66 wherein the at least one fiber is spun onto a mandrel in a helical formation.

68. The method of claim 67 wherein the angle of the helix is about 10°.

69. The method of clam 67 wherein the angle of the helix is about 45°.

70. The method of claim 67 wherein the mandrel is heated in a chamber to enhance bonding of the resin to the at least one fiber.

71. The method of claim 67 wherein the at least one fiber is cured.

72. The method of claim 71 wherein the curing step is performed in a humidity and temperature controlled environment.

73. The method of claim 71 wherein after the at least one fiber is cured the resulting cylindrical blank is removed from the mandrel and placed on a lathe for subsequent machining.

74. The method of claim 67 wherein the at least one fiber is formed into a fabric and dipped into the resin prior to being spun onto the mandrel.

75. The method of claim 66 wherein the at least one fiber is formed into a fabric and inserted into a mold shaped into a desired configuration of the disposable downhole tool.

76. The method of claim 75 wherein the biodegradable resin is injected into the mold under pressure and once the mold is filled with the resin a vacuum is applied to the mold to remove any remaining air.

77. The method of claim 76 wherein the mold is heated to allow the resin to bond to the fabric.

78. The method of claim 77 wherein the mold is cured.

79. The method of claim 75 wherein the fabric lines the mold.

80. The method of claim 66 wherein the resin and at least one fiber comprise a degradable polymer.

81. The method of claim 66 wherein the resin and at least one fiber comprise one or more compounds selected from the group consisting of polysaccharides

such as dextran or cellulose; chitin; chitosan; proteins; aliphatic polyesters; poly(lactide); poly(glycolide); poly(ε-caprolactone); poly(hydroxybutyrate); poly(anhydrides); aliphatic polycarbonates; poly(orthoesters); poly(amino acids); poly(ethylene oxide); and polyphosphazenes.

82. The method of claim 66 wherein the resin and at least one fiber comprise one or more compounds selected from the group consisting of poly(adipic anhydride), poly(suberic anhydride), poly(sebacic anhydride), poly(dodecanedioic anhydride), poly(maleic anhydride), and poly(benzoic anhydride).

83. A method of manufacturing a disposable composite downhole tool that decomposes when exposed to a well bore environment comprising the step of forming the disposable downhole tool of at least one poly(lactide) or polyanhydride fiber and a poly(lactide) or polyanhydride resin.